nexen

LINEAR MOTION CONTROL PRODUCTS

User Manual

Spring-Engaged Rod/Shaft Lock

RLSS-S
RLSS-C

FORM NO. L-21183-D-1005

In accordance with Nexen's established policy of constant product improvement, the specifications contained in this manual are subject to change without notice. Technical data listed in this manual are based on the latest information available at the time of printing and are also subject to change without notice.

Technical Support: 800-843-7445
(651) 484-5900

www.nexengroup.com

DANGER

Read this manual carefully before installation and operation.

Follow Nexen's instructions and integrate this unit into your system with care.

This unit should be installed, operated and maintained by qualified personnel ONLY.

Improper installation can damage your system or cause injury or death.

Comply with all applicable codes.

Nexen Group, Inc.
560 Oak Grove Parkway
Vadnais Heights, Minnesota 55127

ISO 9001 Certified

Copyright 1999 Nexen Group, Inc.

INSTALLATION

NOTE: "Rod" and "Shaft" refer to the same feature and are used interchangeably.

1. Apply a constant supply of at least 4.1 bar (60 PSI) to the Rod Lock device.

2. Remove the supplied rod from the inside of the Rod Lock and keep for future use.

CAUTION

Do not engage the Rod Lock without a properly sized rod in place or damage to the internal components may result.

3. Carefully work the new rod past the seal(s) and through the Rod Lock assembly.

4. When the rod is in the desired position, engage the lock by removing air pressure.

5. A variety of mounting configurations are available; mount the rod lock as desired. The rod lock unit can be installed in any orientation: with a cylinder for the "C" models, or as a stand alone unit for the "S" models.

ROD MATERIAL

- Nexen's Rod Lock must mount to a shaft that is hardened to a minimum of HRC 60 or hard-chrome plated to a minimum thickness of 20 microns [0.0008 in] or damage to the shaft may result.

- The diameter should lie in the h8 tolerance range.
  Reference: USAS B4.1 - 1967(1974)
  ISO 286-1 - 1988
  ISO 286-2 - 1988

- The rod must be clean and dry to maintain optimum holding forces.

- The surface roughness Rmax should be 1.6 microns [63 microinch] or better.

- The rated holding force corresponds to static load conditions. If the rated value is exceeded, slippage may occur. Operating dynamic forces must not exceed the static holding force.

CAUTION

Nexen's Static Rod Lock is suitable for infrequent dynamic braking (emergency stops) when used with hardened shaft material. Repeated dynamic stops may cause rod and/or collar wear, reducing holding forces.

AIR FITTINGS

DANGER

Support the load before disengaging the Rod Lock. Failure to support the load could result in serious bodily injury.

1. The Nexen rod lock is equipped with a NPT or BSPT port for the air inlet. Route clean air, using soft or hard lines, supplying at least 4.1 bar [60 psi] to facilitate full disengagement.

NOTE: Install the valve in close proximity to the Rod Lock unit for faster engagement and disengagement.

Higher air pressures will also speed the disengagement time, but do not exceed 8.0 bar [120 psi] air pressure.

2. The Nexen rod lock is equipped with a port for the internal vent (filters are included with most models). If the air quality around the application is poor, route the vent of the rod lock to a more suitable area, or use a filtered breather. Contact Nexen for available components.

NOTE: Clean air is important for proper Rod Lock functioning. Debris inside the Rod Lock may inhibit performance and/or shorten the life of the product.

CYLINDER MOUNTING

Minimum release pressure = 4 bar [60 psi]
Maximum pressure = 8 bar [120 psi]

Cylinder functioning is regulated by a 5/3 valve (use cylinder manufacturer's recommend Cv valves), center open on the central port and supplied by exhaust ports.

NOTE: Do not use a valve with a closed center. This will cause unbalance in the piston if any of the circuits leak.

One-directional flow reducers can be used to control the speed of the cylinder rod. To ensure fast braking of the rod, a quick exhaust valve can be installed on or near the rod lock.

The normally closed (NC) solenoid valve directs the air supply to the rod lock, keeping it disengaged until the electrical signal is interrupted.

Vertical Mounting: The force on the piston must not exceed its locking capacity when it is combined with the force of the load.

Use of a 5/3 valve provides a braking effect and maintains accurate rod positioning. Stopping precision is determined by the rate of speed of the rod and loads in motion.

Horizontal Mounting: Pressure is maintained on both sides of the cylinder piston, keeping it balance, preventing displacement of the rod upon release. Use exhaust ports 3 and 5 (see below).

STAND-ALONE MOUNTING

Specifications match those of cylinder models listed above.

CAUTION

When programming the Nexen Rod Lock in motion control systems, it is critical to avoid repeated overlapping conditions (i.e.: forced motion during the engagement or disengagement of the Rod Lock). Shaft damage will result. Design the control system to use the Rod Lock in static conditions.

Nexen's Rod Lock must mount to a shaft hardened to a minimum of HRC60 or hard-chrome plated to a minimum thickness of 20 microns [0.0008 in] or damage to the shaft may result.

System Shown: Vertical mounting with the load on top of the cylinder

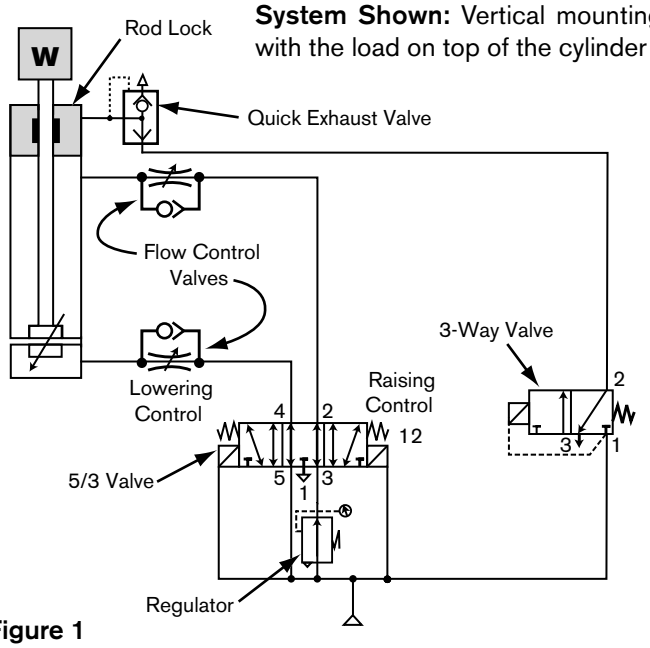


Figure 1

System Shown: Cylinder control using a 5/3 valve with the center open on the central port.

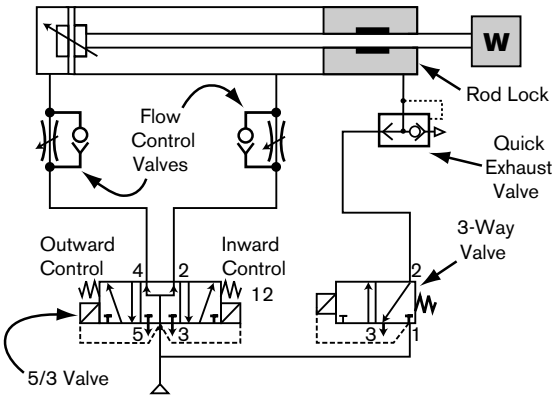


Figure 2

System Shown: Cylinder control using a 5/3 valve with the center open on the central port.

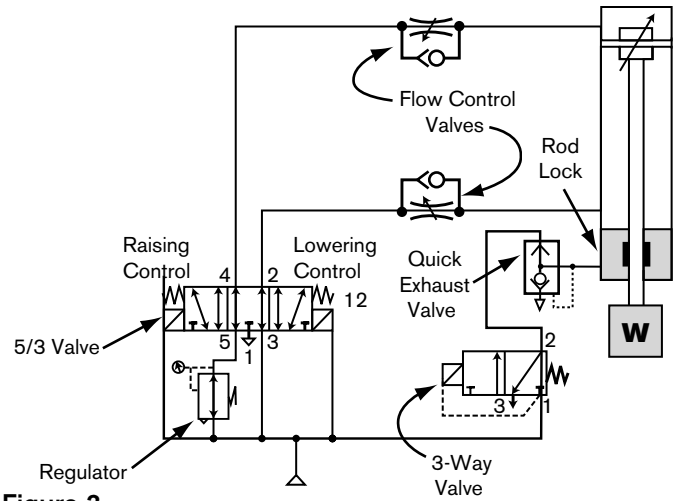


Figure 3

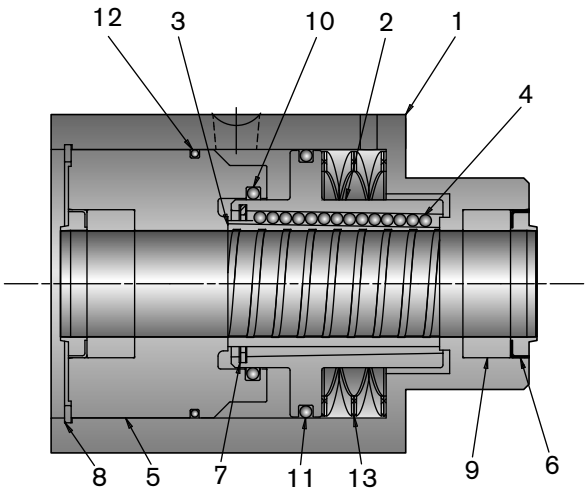
AIR PREPARATION

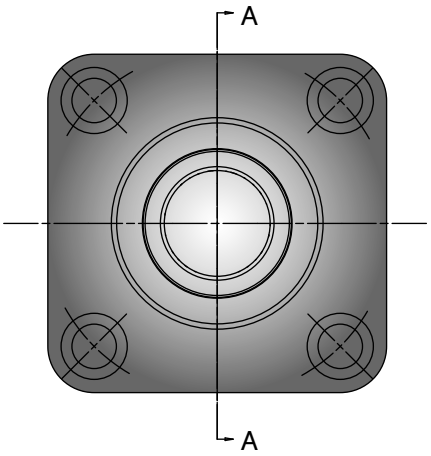
For long life, Nexen's Rod Lock requires clean and pressure regulated air (filtered to five microns or better).

Nexen does not recommend lubricated air for this product.

ROD LOCK ASSEMBLY

RLSS-S Model Shown



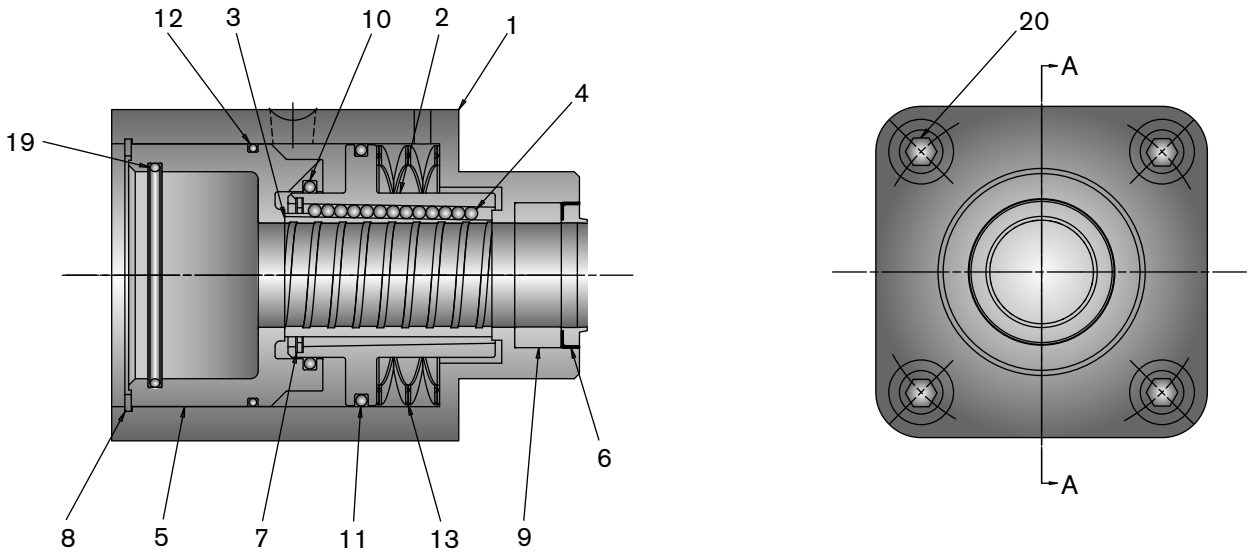


ITEM	DESCRIPTION	QTY
1	Housing	1
2	Piston	1
3	Friction Collar	1
4	Steel Ball	*
5	End Cap	1
6	Rod Wiper Seal	2
7	Retaining Ring	1

ITEM	DESCRIPTION	QTY
8	Retaining Ring	1
9	Sleeve Bearing	2
10	O-ring Seal	1
11	O-ring Seal	1
12	O-ring Seal	1
13	Spring	*
17	Shaft	1

* **Varies with size and model**

RLSS-C Model Shown



ITEM	DESCRIPTION	QTY
1	Housing	1
2	Piston	1
3	Friction Collar	1
4	Steel Ball	*
5	End Cap	1
6	Rod Wiper Seal	1
7	Retaining Ring	1
8	Retaining Ring	1

ITEM	DESCRIPTION	QTY
9	Sleeve Bearing	1
10	O-ring Seal	1
11	O-ring Seal	1
12	O-ring Seal	1
13	Spring	*
17	Shaft	1
19	Guide O-Ring	1
20	Screw Mounting	4

* **Varies with size and model.**

SERVICE RECOMMENDATION

NOTE: The rod lock assembly is designed for extended service life. Due to this long product life, stored spring energy, and the complexity of the internal components, Nexen recommends that all service be performed by trained personnel.

Do not attempt to remove the retaining ring and dismantle the rod lock assembly. This product is spring loaded and under pressure. If the product malfunctions, replace the unit or contact Nexen.

WARRANTY

Warranties
Nexen warrants that the Products will be free from any defects in material or workmanship for a period of 12 months from the date of shipment. NEXEN MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. This warranty applies only if (a) the Product has been installed, used and maintained in accordance with any applicable Nexen installation or maintenance manual for the Product; (b) the alleged defect is not attributable to normal wear and tear; (c) the Product has not been altered, misused or used for purposes other than those for which it was intended; and (d) Buyer has given written notice of the alleged defect to Nexen, and delivered the allegedly defective Product to Nexen, within one year of the date of shipment.

Exclusive Remedy
The exclusive remedy of the Buyer for any breach of the warranties set out above will be, at the sole discretion of Nexen, a repair or replacement with new, serviceably used or reconditioned Product, or issuance of credit in the amount of the purchase price paid to Nexen by the Buyer for the Products.

Limitation of Nexen's Liability
TO THE EXTENT PERMITTED BY LAW NEXEN SHALL HAVE NO LIABILITY TO BUYER OR ANY OTHER PERSON FOR INCIDENTAL DAMAGES, SPECIAL DAMAGES, CONSEQUENTIAL DAMAGES OR OTHER DAMAGES OF ANY KIND OR NATURE WHATSOEVER, WHETHER ARISING OUT OF BREACH OF WARRANTY OR OTHER
BREACH OF CONTRACT, NEGLIGENCE OR OTHER TORT, OR OTHERWISE, EVEN IF NEXEN SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OR LIKELIHOOD OF SUCH POTENTIAL LOSS OR DAMAGE. For all of the purposes hereof, the term "consequential damages" shall include lost profits, penalties, delay images, liquidated damages or other damages and liabilities which Buyer shall be obligated to pay or which Buyer may incur based upon, related to or arising out of its contracts with its customers or other third parties. In no event shall Nexen be liable for any amount of damages in excess of amounts paid by Buyer for Products or services as to which a breach of contract has been determined to exist. The parties expressly agree that the price for the Products and the services was determined in consideration of the limitation on damages set forth herein and such limitation has been specifically bargained for and constitutes an agreed allocation of risk which shall survive the determination of any court of competent jurisdiction that any remedy herein fails of its essential purpose.

Limitation of Damages
In no event shall Nexen be liable for any consequential, indirect, incidental, or special damages of any nature whatsoever, including without limitation, lost profits arising from the sale or use of the Products.

Warranty Claim Procedures
To make a claim under this warranty, the claimant must give written notice of the alleged defect to whom the Product was purchased from and deliver the Product to same within one year of the date on which the alleged defect first became apparent.

nexen

Nexen Group, Inc.
560 Oak Grove Parkway
Vadnais Heights, MN 55127

800.843.7445
Fax: 651.286.1099
www.nexengroup.com

ISO 9001 Certified